

Spot Safety Project Evaluation

Project Log # 200512203

Spot Safety Project # 02-96-258

**Spot Safety Project Evaluation of the Realignment of NC 903 at Its Intersection with US 13/US 258.
Greene County**

Documents Prepared By:

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9/6/2006
Date

Spot Safety Project Evaluation Documentation

Subject Location

Evaluation of Spot Safety Project Number 02-96-258 – The Intersections of US 13/US 258 and NC 903 in Greene County.

Project Information and Background from the Project File Folder

The spot safety project improvement countermeasures chosen for the subject location was the realignment of NC 903 at its intersection with US 13/US 258. Before the realignment, NC 903 split in two to form a “Y” intersection at US13/258. The northern portion of the “Y” was realigned so that it created a 90-degree angle at the intersection. The southern portion of the “Y” was narrowed to accommodate one way traffic and remained as a right-turn slip ramp for eastbound US 13/258 onto NC 903. In addition, a left-turn lane was added on southbound US 13/258 at the same time as the realignment. Both US 13/258 and NC 903 are 2-lane facilities with speed limits of 55 mph at the subject location. NC 903 has a stop ahead warning sign on the approach to the intersection. Please see the *Collision Diagrams* for further details.

The initial statement of problem was that the “Y” type intersection on NC 903 created a 20 degree angle at one end and a 40 degree angle at the other. Due to this, large vehicles making a left turn onto US 13/258 had difficulty seeing approaching southbound traffic.

The initial crash analysis for this location yielded 2 left turning accidents at the subject intersection within a 5-year period. The final completion date for the project was November 30, 1999 with a total cost of \$65,000.

Naive Before and After Analysis

After reviewing the spot safety project file folder along with all the crashes at the subject location, the crash data omitted from this analysis to consider for an adequate construction period was from October 1, 1999 to January 31, 2000. The before period consisted of reported crashes from October 1, 1993 through September 30, 1999 (6 Years) and the after period consisted of reported crashes from February 1, 2000 through January 31, 2006 (6 Years). The ending date for this analysis was determined by the available crash data at the time the crash analysis was completed.

The treatment data consisted of all crashes within 150 feet of the intersection. The following data table depicts the Naive Before and After Analysis for the above information. Please note Left Turn-Different Roadway crashes were the Target Crashes for the applied countermeasure.

<u>Treatment Information</u>			
	Before	After	Percent Reduction (-) Percent Increase (+)
Total crashes	19	8	-57.9
Total Severity Index	7.72	5.62	-27.2
Target Crashes	7	3	-57.1
Target Severity Index	13.94	8.4	-39.7
Volume	8,700	11,200	28.7

The naive before and after analysis at the treatment location resulted in a 58 percent decrease in Total Crashes, a 57 percent decrease in Target Crashes, and a 29 percent increase in Average Daily Traffic (ADT). The before period ADT year was 1996 and the after period ADT year was 2003. In addition, the Total Severity Index decreased 27 percent and the Target Severity Index decreased 40 percent.

Results and Discussion

The naive before and after analysis involving the comparison of treatment actual before data versus treatment actual after data resulted in a 58 percent decrease in Total Crashes and a 57 percent decrease in Target Crashes, despite a 29 percent increase in volume. The summary results above demonstrate that the treatment location appears to have had a decrease in both Total Crashes and Target crashes from the before to the after period.

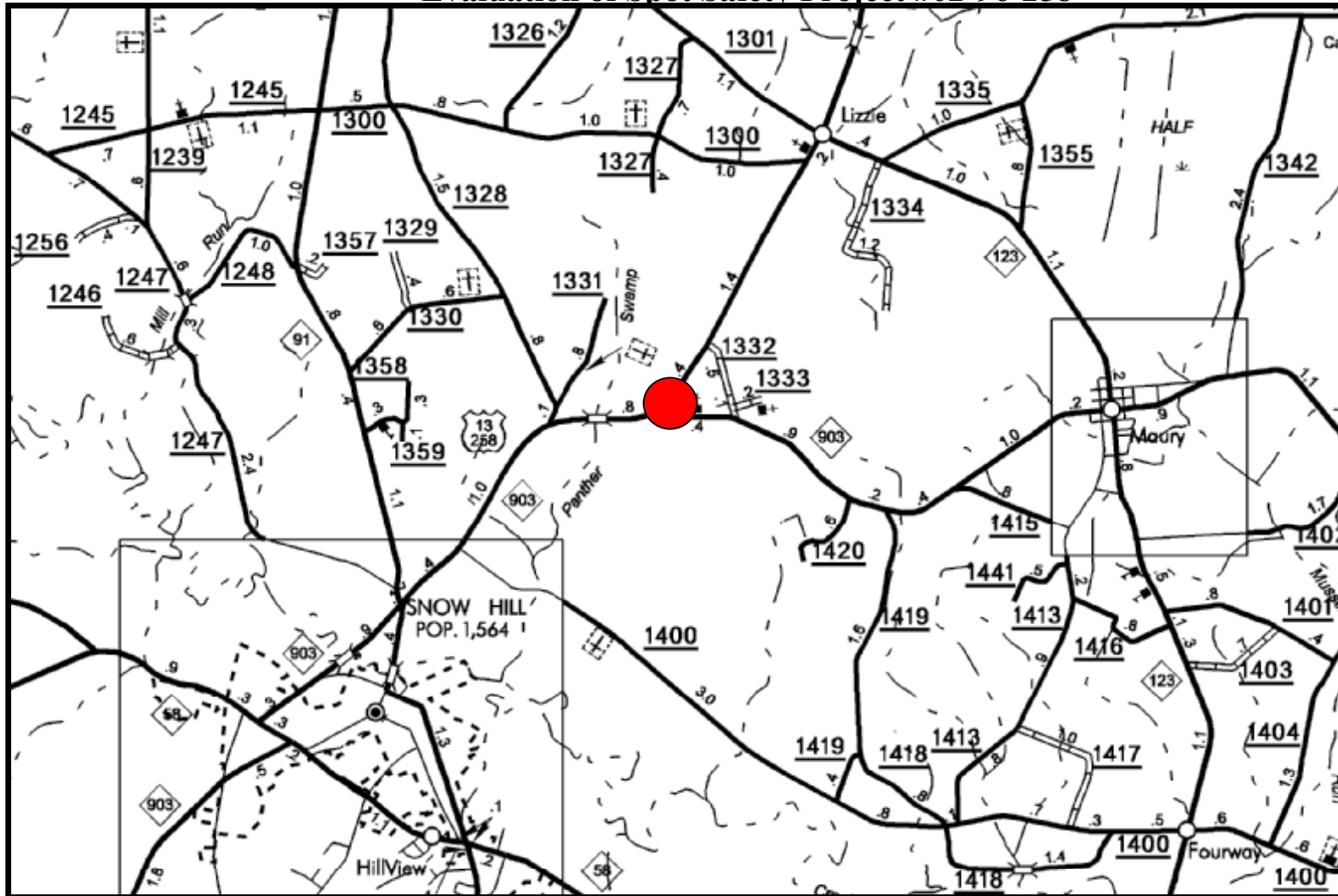
Referencing the *Collision Diagram, Before Period*, there was a crash pattern (7 crashes) involving left turning vehicles from NC 903 on the southern portion of the “Y” intersection. Six of these crashes involved a northeast bound vehicle on US 13/258. This might have been due to the large angle that drivers at the stop had to turn their head to observe southwest bound traffic. While doing so, they may have been less observant to the northeast bound traffic. After the realignment, the intersection was 90 degrees, and this crash pattern reduced to only 3 crashes.

Referencing the *Collision Diagram, After Period*, two vehicles ran the stop sign on NC 903 and crossed US 13/258, falling into a ditch. There is a stop sign on either side of the stop condition and a “Stop Ahead” warning sign.

Please see the attached *Treatment Site Photos*. Photos are provided for all approaches to the intersection.

As the Safety Evaluation Group completes additional spot safety reviews for this type of countermeasure, we will be able to provide objective and definite information regarding actual crash reduction factors for this type of intersection.

Location Map
Greene County
Evaluation of Spot Safety Project #02-96-258



Treatment Location: US 13/258 and NC 903

Treatment Site Photos Taken July 18, 2006



Traveling South-West on US 13/US 258



Traveling South-West on US 13/US 258



Traveling South-West on US 13/US 258



Traveling East on US 13/US 258



Traveling East on US 13/US 258



Traveling East on US 13/US 258



Traveling East on US 13/US 258 (At Slip Ramp)



Traveling West on NC 903



Traveling West on NC 903



Traveling West on NC 903



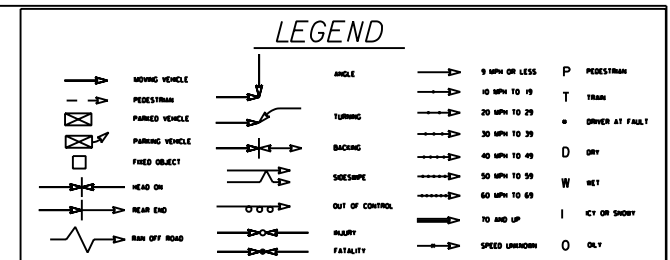
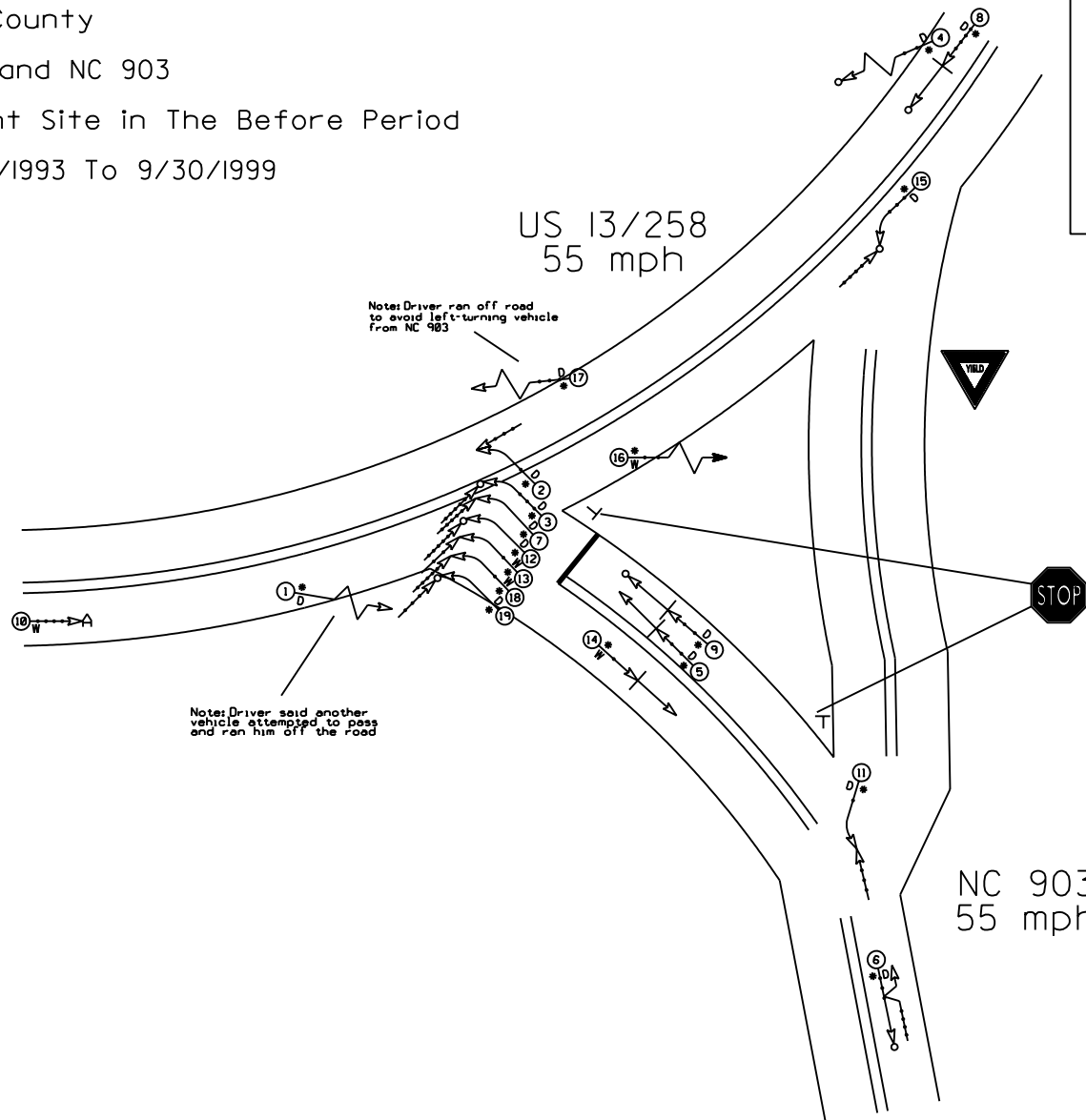
Traveling West on NC 903

Greene County

US13/258 and NC 903

Treatment Site in The Before Period

From 9/1/1993 To 9/30/1999



TRAFFIC SAFETY SYSTEMS MANAGEMENT UNIT



COLLISION DIAGRAM	
DIVISION 2	AREA
STUDY PERIOD: 9/1/1993-9/30/1999	
DISTANCE: 1/2 MI. + 1/2 MI.	
ANALYSIS PREPARED BY: B. Robinson	
ANALYSIS CHECKED BY:	
DIAGRAM PREPARED BY: B. Robinson	
DIAGRAM REVIEWED BY:	
SCALE:	NOT TO SCALE
DATE: June 2006	
LOG NUMBER: 20060203	

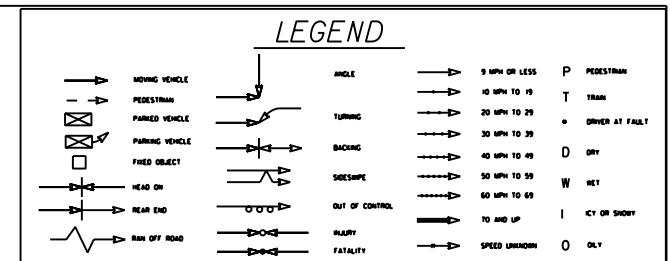
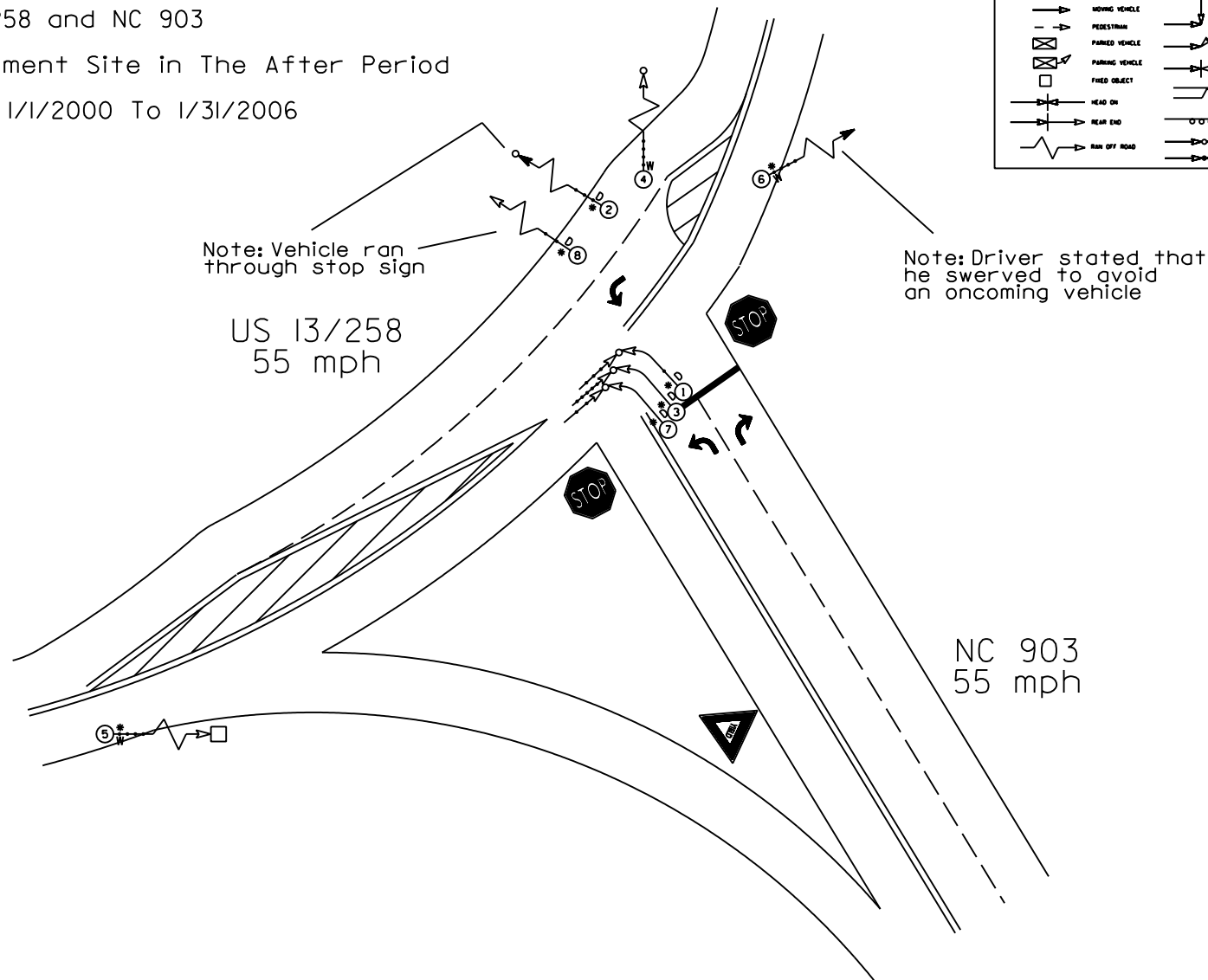
N.C. DEPARTMENT of TRANSPORTATION
DIVISION of HIGHWAYS
TRAFFIC ENGINEERING AND SAFETY
SYSTEMS BRANCH

Greene County

US13/258 and NC 903

Treatment Site in The After Period

From 1/1/2000 To 1/31/2006



TRAFFIC SAFETY SYSTEMS MANAGEMENT UNIT

COLLISION DIAGRAM	
DIVISION 2	AREA
STUDY PERIOD: 01/01/00-01/31/06	
DISTRICT: T-100	
ANALYSIS PREPARED BY: B. Robinson	
ANALYSIS CHECKED BY:	
DIAGRAM PREPARED BY: B. Robinson	
DIAGRAM REVIEWED BY:	
SCALE:	NOT TO SCALE
DATE: June 2006	
LOG NUMBER: 20050203	

N.C. DEPARTMENT of TRANSPORTATION
DIVISION of HIGHWAYS
TRAFFIC ENGINEERING AND SAFETY
SYSTEMS BRANCH